

IN THE SPECIFICATION:

Please amend paragraph [0025] as shown below.

[0025] Referring to Figs. 4, 5 and 6, a desired characteristic of mold 27 is that the adherence of cross-linked polymer material 36 thereto is minimized. To that end, a surface of mold 27 may be treated with a modifying agent, referred to as a release layer 42. To function satisfactorily, it is desired that release layer 42 should adhere well to mold 27 without adhering well to imprint cross-linked polymer material 36, should be relatively transparent to actinic radiation, as well as mechanically sound to minimize premature operational failure. Suitable materials for use as release layer 42 are referred to as diamond-like compositions, such as diamond-like carbon (DLC) or diamond-like nano-composite available under the tradename DYLYN® from The Bekaert Group, Amherst, New York. Diamond-like compositions are characterized as a low surface energy material that exhibit release characteristics to cross-linked polymer material 36. Specifically, surface energies associated with DLC is in a range of 25 to 40 mN/m (milli-Newtons per meter). The surface energies associated with DYLYN® is in a range of  $31.51 \pm 1.2$  mN/m. The low surface energies associated with diamond-like compositions minimize the adhesion of cross-linked polymer material 36 to mold 27. As a result, cross-linked polymer material 36 of imprinting layer 32 is less likely to tear or shear during separation of mold 27 from cross-linked polymer material 36 in imprinting layer 32.

Please amend paragraph [0026] as shown below.

[0026] Release layer 42 is also substantially transparent to actinic radiation, e.g., UV light. Transparency of release layer 42, as well as mold 27, to actinic radiation is desired in imprint lithography. Without actinic radiation propagating through both release layer 42 and mold 27, imprinting material 33 would not solidify into cross-linked polymer material 36, shown in Fig. 4. To that end, release layer 42 should not have a thickness,  $h_1$ , that would prevent sufficient actinic radiation from propagating therethrough to polymerize material 33. In the present embodiment, release layer 42 is no greater than 500 nm thick. Moreover, release layer 42 should be sufficiently thick to facilitate formation of recesses having desired depth,  $h_2$ , to form the desired pattern and without exposing the material from which mold 27 is formed.

Please amend paragraph [0028] as shown below.

[0028]     [[After]] Referring to Figs. 7, 8, and 9, after formation of release layer 42, positive or negative photoresist processes may be employed to pattern the same. To that end, a photoresist layer 15 is deposited adjacent to release layer 42. ~~The photoresist~~ Photoresist layer 15 forms a patterned structure 44 in which regions 46 of release layer 42 are exposed, shown in Fig. 8. Patterned structure 44 is then subjected to suitable etch processes, such as chemical etching and/or plasma etching to form a relief structure in release layer 42. A conventional oxygen RIE dry etch process is used to etch diamond like

films. An exemplary process is disclosed by Taniguchi et al. in DIAMOND NANOIMPRINT LITHOGRAPHY, Nanotechnology 13 (2002) 592-596. Typical conditions of a plasma processing environment (not shown) include providing 100 Watts of power, 50 sccm oxygen at a pressure 6 Pascals. The relief structure formed into release layer 42 defines the original pattern mentioned above and includes protrusions 23 and recesses 25. The geometry of the relief structure formed in release layer 42 may be any known in the art, including arcuate projections and recesses; and/or linear projections and recesses; and/or circumferential projections and recesses and the like. Thereafter, the remaining portions of photoresist layer 15 are removed by exposing the same to a process that does not damage, or otherwise compromise, the structural integrity of release layer 42. For example, a chemical bath, such as sulfuric acid ( $H_2SO_4$ ) or an oxygen ( $O_2$ ) plasma, may be employed. From the foregoing process, a thickness  $h_1$ , shown in Fig. 6, is defined from the interface of release layer 42 with body 41 to an apex of protrusions 23. Protrusions 23 have a thickness  $h_2$ , measured from a nadir of recesses 25 to the apex of protrusions 23.

Please amend paragraph [0030] as shown below.

[0030] Referring to Fig. 10, alternatively, a layer of conducting material may be disposed between ~~substrate 28~~ body 41 and release layer 42, shown as electrically conductive layer 50. To that end, as shown in Fig. 11, electrically conductive layer 50 may be deposited on ~~substrate 28~~ body 41 employing any suitable deposition technique, such as chemical vapor deposition (CVD) and plasma vapor deposition (PVD), atomic layer deposition

(ALD) and the like. It is desired that the conducting layer be formed from a material that is substantially transparent to the actinic radiation for the reasons discussed above. An exemplary material from which conducting layer can be formed is Indium Tin Oxide (ITO).

Please amend paragraph [0031] as shown below.

[0031] After formation of electrically conductive layer 50, release layer 42 is deposited adjacent thereto in the manner discussed above. Thereafter, positive or negative photoresist processes may be employed to pattern the same. To that end, photoresist layer 15 is deposited adjacent to release layer 42 forming stacked structure 47. ~~forming~~ Photoresist layer 15 may be patterned to form patterned structure 44 in which regions 46 of release layer 42 are exposed, shown in Fig. 12. Thereafter, patterned structure 44 is subjected to etch processes, such as chemical etching and/or plasma etching appropriate for the particular material to form a relief structure in release layer 42. The relief structure formed into release layer 42 defines an inverse of the original pattern mentioned above and includes protrusions 23 and recesses 25, shown in Fig. 10. Subsequently, the remaining portions of photoresist layer (not shown) are removed by exposing the same to a process that does not damage, or otherwise compromise, the structural integrity of release layer 42.

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